

ER Site No. 84: Gun Facilities (TA-III)

ADS: 1306

Operable Unit: Tech Area III & V

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Primary Contact: [Dick Fate](#)

Office Phone: 284-2568

Site History

The TA-III Gun Facilities at SNL are located in the west-central portion of TA-III in and adjacent to Building 6750. The facilities consist of both an indoor (Building 6750) and an outdoor test area used for studying impact phenomena. Building 6750 was originally constructed in 1965. Berms were constructed around the building in about 1972. Indoor and outdoor projectile tests reportedly used lead (Pb) and depleted uranium (DU) as both projectile and target materials. Building 6750 is believed to have been used for plutonium tests before these tests were transferred to Los Alamos. The Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment states that there was shrapnel found in the outdoor test area at the Gun Facilities, but no toxic materials were found. The finding of the 1987 CEARP Phase I Installation Assessment indicated that there were no hazardous waste that would be regulated under the Resource Conservation and Recovery Act (RCRA).

The outdoor testing facilities consist of a 75-mm gun to shoot various projectiles into the southern portion of TA-III and earth penetrators directly into the ground. The projectiles were primarily conventional projectiles made of solid steel, although some outdoor tests used lead and DU as both projectiles and targets. According to interviewees, as of May 1990 four outdoor test series had been performed:

- Series 1: Between 1983 and 1985 approximately six shots of DU were fired into DU targets. Each projectile weighed approximately 5 to 10 lb (2 to 5 kg). Information collected from several sources suggests most of the DU was recovered. The exact location of the shot impact area is not known.
- Series 2: Between 1985 and 1987, 30 to 50 shots of DU each weighing approximately 14 lb (6.4 kg) were fired into steel targets located approximately 300 ft (91 m) south of Building 6750. The total DU fired from these tests is between 450 to 750 lb (204 to 340 kg). The steel targets reportedly were destroyed and the DU vaporized at the impact area.
- Series 3: 50-lb (22 kg) Earth Penetrators were shot vertically into the ground at 4-ft² (0.4-m²) underground targets. The tests were performed in 6 to 10 boreholes drilled to targets buried between 5 to 12 ft (1.5 to 3.7 m) below grade. Although the boreholes or buried

targets were said to be located along the asphalt just south of where the pavement ends or under the pavement south of Building 6750, the exact locations of the borings or buried targets are not known. Approximately 300 lb (136 kg) of DU was unaccounted for following the tests. According to one interviewee, all the DU was eventually recovered.

- Series 4: Four 30-lb (13.6-kg) weapons containing DU were shot with bullets at two berms in the southern part of TA-3. The DU was reportedly mostly vaporized. Video recordings were made of these tests. The location of the impact area for these tests has not been verified.

Observations made during a site visit (March 20, 1992) and information collected from an interviewee indicate the existence of a buried pit immediately south of a berm containing a concrete bunker approximately 300 to 400 ft (91 to 122 m) south of Building 6750. This pit, believed to be from Series 2 testing, may contain DU, lead, and iron fragments. Field measurements produced low-level readings when the area was monitored for beta/gamma radiation at the ground surface. Surface DU fragments have been collected by SNL personnel from this area in the past. A subsequent site visit in November 1992 discovered that heavy equipment removed all the soil from the concrete bunker at the test pit and disturbed surface soils over a large area. A portion of the disturbed area is within the survey region of previous site assessment work.

The primary focus for investigation at the site will be sampling to assess the Series 2 test pit and Series 3 penetrator test areas. In addition, an attempt will be made to obtain additional archive or interview information on the specific locations of Series 1, 3, and 4 test areas. The planned work is defined in greater detail in the RCRA Facility Investigation (RFI).

Constituents of Concern

Depleted Uranium
Unexploded Ordnance and High Explosives
Metals (Pb)

Current Hazards

At <1 ft and >1ft below ground surface:
Depleted Uranium
Unexploded Ordnance and High Explosives
Metals (Pb)

Current Status of Work

A geophysical survey of Site 84 was conducted in two pieces during 1994 and 1995, and encompassed approximately 11 acres. An initial survey extended 500 ft to the south of Building 6750. A second survey was conducted based on the indications in the first survey that buried objects extended farther south and concentrated around an impact berm; the 2nd survey doubled

the initial area of investigation and included the impact berm. Several areas of potential burials were located.

A radiation survey of the gun facilities and surrounding areas was completed in 1994 as part of the ER Project-wide surface radiation survey and removal VCM. Approximately 60 anomalies (in excess of background radiation) were detected. Removal of the anomalies was completed in 1996 as part of the ER Project-Wide Surface Radiation Removal Voluntary Corrective Measure (VCM).

Future Work Planned

Upon decommissioning of the site, full sampling and analysis according to the RFI Work Plan will be performed. The schedule for decommissioning is not available as of January 2003.

Waste Volume Estimated/Generated

The ER Project-Wide surface radiation removal VCM generated 230 55-gallon drums of radioactive waste between FY94 and FY96.

Information for ER Site 84 was last updated Jan 21, 2003.